

REMARKS

Claims 1-52 are pending. Claims 20-31 and 33-46 have been withdrawn from further consideration as drawn to a non-elected species, the requirement having been traversed in Paper No. 7. By this Amendment, claims 1-15 are amended for clarification purposes only, and new claims 50-52 are added. Reconsideration in view of the above amendments and following remarks is respectfully requested.

The Office Action rejects claims 1-4 under 35 U.S.C. §102(b) over Japanese Kokai No. 6-308312, Yaniv (U.S. Patent No. 5,281,450), Kim (U.S. Patent No. 5,274,481) or Akins (U.S. Patent No. 5,399,390); claims 5-19, 32 and 49 are rejected under 35 U.S.C. §103(a) over Japanese Kokai No. 6-308312, Yaniv, Kim or Akins; claim 48 is rejected under 35 U.S.C. §103(a) over Kim or Akins; and claim 47 is rejected under 35 U.S.C. §103(a) over Japanese Kokai No. 6-308312 or Yaniv in view of Wetsel (U.S. Patent No. 4,007,462). Applicants respectfully traverse these rejections as applied to claims 1-19, 32 and 47-52.

Specifically, Applicants assert that neither Japanese Kokai No. 6-308312, Yaniv, Kim, Akins or Wetsel, alone or in combination, disclose or suggest a display device having at least an optical material arranged at predetermined positions on an object comprising a display substrate, the predetermined positions being defined by features of which repellency to the optical material in one of a liquid or a liquid precursor of the optical material is substantially different from that of peripheries of the features, as recited in independent claim 1, and similarly recited in independent claims 2, 5 and 7.

Furthermore, neither Japanese Kokai No. 6-308312, Yaniv, Kim, Akins or Wetsel, alone or in combination, disclose or suggest a method of manufacturing a display device having at least the steps of forming a plurality of first bus lines on a first object having a display substrate, forming features defining predetermined positions at a surface of a second

object including the first object, applying one of an optical material or a precursor of the optical material to a surface of the second object, forming a layer to be transferred, including a plurality of second bus lines, on a peeling layer and transferring the layer to be transferred onto the second object coated by the optical material or the precursor, as recited in independent claim 6, and similarly recited in independent claim 8.

Specifically, Japanese Kokai No. 6-308312 discloses a color filter manufactured by forming black matrix patterns on a glass substrate, and then etching the glass using such patterns as a mask. A light sensing plastic material is then coated on the etched substrate, and the surface of the pattern is grinded to make the height of the color filter and black matrix uniform.

Yaniv discloses a light influencing element adapted to act as a color filter for optical systems such as image scanning systems and active or passive liquid crystal display devices. See column 1, lines 13-16. As shown in Fig. 1, a light-influencing element 10 includes a transparent substrate 12, which serves as the base upon which subsequent structures are formed. See col. 4, lines 42-44. Disposed upon the substrate 12 is a layer of substantially opaque material 14. See col. 4, lines 56-57. The opaque material 14 is deposited at a thickness sufficient to prevent the transmission of light, and includes at least one opening 16 which extends through the layer 14 to the substrate 12. See col. 5, lines 8-10. Disposed in each of the openings 16 is a light influencing material selected to provide a desired optical effect. See col. 5, lines 42-46.

As shown in Fig. 3, a subassembly 300 is fabricated by disposing a continuous layer of a transparent, passivating material 26 atop color filters 18a, 18b, 20a, 20b, 22a, and 22b and layer 14 of the light-influencing element 10. See col. 7, lines 29-34.

Kim discloses a plane display apparatus, in which the R, G and B liquid crystals are filled in respective isolated cells provided with the liquid crystals of different drive characteristics. See col. 2, lines 26-30. As shown in Fig. 3a and 3b, partition walls 23 are formed between two substrates 22a and 22b provided with electrodes 21a and 21b being formed on the substrates 22a and 22b. Liquid crystal cells 25-27 which are filled with uni-color liquid crystals 25a-27a in the form of small drops within solidified polymers 24 are isolated by the partition walls 23, while the cells are arranged in order of R, G and B colors to form a matrix.

Akins discloses a liquid crystal display device having liquid crystal material disposed in between two substrates. As shown in Figs. 3 and 4, the liquid crystal display device 60 includes a first substrate 30 which has a plurality of channels 36, 38 and 40 and disposed between each channel is a rib 42, 44, 46 and 48. See col. 4, lines 3-12. Furthermore, disposed in each channel is a thin layer of transparent conductive material 50, 52 and 54. The liquid crystal display device 60 in Akins further includes a second substrate 62. Located in each channel 50, 52 and 54 is a layer of cholesteric liquid crystal material 66, 68, 70, which is injected in the channels after the substrates are bound together, but prior to sealing the edges.

Wetsel discloses the application of a continuous coating to a document surface of a material which will undergo photo transformation of the light emitting properties upon irradiation by an intense light beam. See col. 1, lines 62-65.

In contrast to Applicants' claimed invention, neither Japanese Kokai No. 6-308312, Yaniv, Kim, Akins or Wetsel disclose or suggest a display device having at least an optical material arranged at predetermined positions on an object comprising a display substrate, the predetermined positions being defined by features of which repellency to the optical material in one of a liquid or a liquid precursor of the optical material is substantially different from

that of peripheries of the features. Furthermore, neither Japanese Kokai No. 6-308312, Yaniv, Kim, Akins or Wetsel, disclose or suggest a method of manufacturing a display device having at least the steps of forming a plurality of first bus lines on a first object having a display substrate, forming features defining predetermined positions at a surface of a second object including the first object, applying one of an optical material or a precursor of the optical material to a surface of the second object, forming a layer to be transferred, including a plurality of second bus lines, on a peeling layer and transferring the layer to be transferred onto the second object coated by the optical material or the precursor.

On the contrary, although Yaniv discloses recesses where an optical material is disposed, Yaniv fails to disclose a pattern having regions that include different repellency to optical material. Likewise, Japanese Kokai No. 6-308312, Kim, Akins and Wetsel all fail to disclose that predetermined positions are defined by features of which repellency to the optical material in one of a liquid or a liquid precursor of the optical material is substantially different from that of peripheries of the features.

In such a method, the hydrophilicity of the predetermined positions where the liquid optical material is coated is enhanced relative to the hydrophilicity of the peripheries of the features to prevent the coated liquid optical material from spreading to the peripheries. For example, since an amorphous silicon layer has a high water repellency relative to an ITO film which forms a pixel electrode, a distribution of water repellency and hydrophilicity is formed in which the hydrophilicity of the surface of the pixel electrode is high relative to the hydrophilicity of a periphery. Subsequently, a liquid optical material can be coated, after a desired distribution of water repellency and hydrophilicity is formed, on an upper surface of the pixel electrode by, for example, an ink jet method, to form a light emitting element. The

end result is that precision patterning is significantly improved while maintaining low cost, high throughput and a high degree of freedom to arrange the optical material.

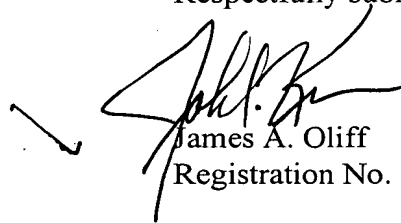
Further, none of the cited references are concerned with a method of manufacturing a display device that transfers a formation on a first substrate to a second substrate, for example, a method that enables a fabrication of a device even if the second substrate is a low heat resistant substrate or a flexible substrate.

Accordingly, Applicants assert that neither Japanese Kokai No. 6-308312, Yaniv, Kim, Akins or Wetsel disclose or suggest all of the features of any one of independent claims 1, 2 and 5-8. Accordingly, independent claims 1, 2 and 5-8 define patentable subject matter. Claims 3-4, 9-19, 32 and 47-49 depend from independent claims 2 and 7, and therefore also define patentable subject matter. Therefore, Applicants respectfully request that the rejection of claims 1-4 under 35 U.S.C. §102(b), and claims 5-19, 32 and 47-49 under 35 U.S.C. §103(a) be withdrawn.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration, withdrawal of the Election of Species Requirement and prompt allowance of claims 1-19, 32 and 47-49 are earnestly solicited.

Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' attorney at the telephone number listed below.

Respectfully submitted,

  
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Attachment:

Petition for Extension of Time

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